Claims

1. Process for the purification of radioisotopes wherein the isotopes are dissolved in a dilute acidic solution and adsorbed on the surface of a $d^{10}$-metal whereby the isotopes are selectively desorbed by elution with an eluent in the presence of hydrogen.

2. Process according to claim 1 wherein the surface of the $d^{10}$-metal is an activated surface.

3. Process according to claim 1 wherein the surface of the $d^{10}$-metal is not an activated surface.

4. Process for the concentration of radioisotopes wherein the isotopes are dissolved in a dilute acidic solution and adsorbed on a surface of a $d^{10}$-metal whereby the isotopes are selectively desorbed by elution with an eluent in the presence of hydrogen.

5. Process according to claim 4 wherein the surface of the $d^{10}$-metal is an activated surface.

6. Process according to claim 4 wherein the surface of the $d^{10}$-metal is not an activated surface.

7. Process for the purification and concentration of radioisotopes wherein the isotopes are dissolved in a dilute acidic solution and adsorbed on a surface of a $d^{10}$-metal whereby the isotopes are selectively desorbed by elution with an eluent in the presence of hydrogen.

8. Process according to claim 7 wherein the surface of the $d^{10}$-metal is an activated surface.

9. Process according to claim 7 wherein the surface of the $d^{10}$-metal is not an activated surface.

10. Process according to claim 1-9, wherein the $d^{10}$-metal is platinum.

11. Process according to claim 1, 4, or 7, wherein the particle size of the metal ranges from 1 µm to 2 mm, preferably from 2 µm to 1.5 mm, more preferably from 5 µm to 1 mm.

12. Process according to claim 2, 5, or 8, wherein the surface of the metal is activated by hydrogen.

13. Process according to claim 1, 4, or 7, wherein the acidic solution is a sulphuric acid solution.

14. Process according to claim 1, 4, or 7, wherein the eluent is an alkaline solution with a concentration of $OH^-$ from $10^{-4}$ to 1 M, preferably $10^{-3}$-0.75, more preferably $5*10^{-2}$-0.5.

15. Process according to claim 1, 4 or 7, wherein the column is eluted by an alternating flux of the alkaline solution and hydrogen gas.

16. Process according to claim 1, 4 or 7, wherein the eluent comprises a solution of formiate.

17. Process according to claim 1, 4 or 7, wherein the column is eluted by a solution comprising formiate, preferably at elevated temperatures.

18. Process according to claim 1, 4 or 7, wherein the isotope is selected from I- and At-isotopes.

19. Process according to claim 1, 4 or 7, wherein the isotope is selected from $^{123}I$ and $^{131}I$.

20. Process for the purification of solutions of iodine isotopes by the reduction of oxidised iodine containing compounds on a platinum, palladium or nickel metal, preferably platinum.

21. Process according to claim 20 wherein the metal is activated.

22. Process according to claim 20 wherein the metal is not activated.

23. Process according to claim 20 wherein the solution contains oxidised iodine compounds such as iodate and periodate.

24. Process according to claims 20 wherein the metal has *in situ* reducing properties.

25. Process for preparing a transportable form of isotope[s] whereby the isotope is absorbed on a $d^{10}$-metal.

26. Process for the purification and concentration of radioiodine isotopes comprising the steps of

a. providing a platinum surface in a column;

b. loading the column with an acidic radioiodine solution;

c. eluting the column.

27. Process according to claim 26 wherein before the step of loading the column there is a step of activating the platinum surface with hydrogen gas.

28. Apparatus for the purification of radioisotopes comprising a column containing a metal, means for activating the metal, means for loading the column and means for eluting the column.

29. Column comprising platinum and radioiodine, wherein the iodine is absorbed on the platinum.

30. Composition comprising platinum and iodine in a vessel suitable for storage and shipment.